CLAIMS:

1.   A method of providing threshold crossing timing recovery in an optical system, which optical system is adapted to read data signal samples from an optical disc, said method comprising the steps of
-        reading data signal samples (y_s) at a sampling time (t_s) from the optical disc by means of the optical system,
-        feeding the read data signal samples (y_s) to a timing recovery means,
-        determining timing error information (ψ_k) by means of the timing recovery means,
-        adjusting the sampling time (t_s) towards the synchronous timing instants (t_k) on the basis of the timing error information (ψ_k),
characterized in that the method further comprises a step of multiplying the timing error information (ψ_k) by a weighing function W in succession of the step of determining the timing error information (ψ_k) and before the step of adjusting the sampling time (t_s) towards the synchronous timing instants (t_k).

2.   A method according to claim 1, characterized in that the timing recovery means is adapted to provide timing recovery to data signal samples coded in binary modulation.

3.   A method according to any of the claims 1 or 2, characterized in that the weighing function W is a function of $s_k = |(y_k - y_{k+1})/(t_k - t_{k+1})|$, where y_k and y_{k+1}, respectively, are synchronized data signal samples and t_k and t_{k+1}, respectively, are synchronous sampling instants.

4.   A method according to claim 3, characterized in that $W(s_k) = s_k/s_{max}$, where s_{max} represents the maximum value of s_k.

5.   A method according to claim 3, characterized in that $W(s_k) = (s_k/s_{max})^2$, where s_{max} represents the maximum value of s_k.

6. A method according to claim 3, characterized in that $W(s_k) = \exp [1-(s_k/s_{max})^{-1}]$, where s_{max} represents the maximum value of s_k.

5   7. A method according to any of the claims 1 to 6, characterized in that the timing recovery means is adapted to provide timing recovery to data signal samples coded in RLL(d) coding.

8. A method according to any of the claims 1 to 7, characterized in that the
10   threshold crossing timing recovery is a zero crossing timing recovery.

9. A method according to claim 7 or 8, characterized in that the weighing function W is a function $W(T_m, T_{m+1})$, where the arguments T_m and T_{m+1} are the two successive run lengths T_m and T_{m+1}, respectively, around a transition.

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10. A method according to claim 9, characterized in that the weighing function $W(T_m, T_{m+1})$ increases when the sum of T_m and T_{m+1} increases.

11. A method according to any of the claims 8 to 10, characterized in that the
20   weighing function $W(T_m, T_{m+1})$ decreases when the numerical difference $|T_m-T_{m+1}|$ between T_m and T_{m+1} increases.

12. A method according to any of the claims 8 to 11, characterized in that the weighing function $W(T_m, T_{m+1})$ is 0, if T_m equals "d+1" or if T_{m+1} equals "d+1", where "d+1"
25   is the shortest run length in the RLL coding.

13. An optical system for reading data stored on high capacity optical disc, characterized in that the optical system performs a method according to any of the claims 1 to 12.